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ABSTRACT

The short history in the field of online learning of the UNITEC Institute of Technology (New Zealand) provides a story of changing attitudes and usage at three levels--organizational, tutorial, and student. From the first course designed for flexible delivery in 1994, UNITEC has progressed through three distinct phases of course development (i.e., the first online program, online course development projects in all faculties, and World Wide Web course management systems). As of the middle of 2001, UNITEC has over 300 courses that are completely online or have some element of online delivery or support for students, ranging across all five academic faculties. To support this rapid increase in the use of the medium, a number of organizational changes have been made, along with a program of professional development and tutor and student support. This paper looks briefly at the process of growth and the changing nature of ongoing tutor development. There have been significant changes in the way tutors use the course delivery interface, and the professional development program has tended towards more active support of the issues of teaching and learning. The paper reports on some of the lessons learned, the difficulties that have arisen, and some of the challenges for the future. (Author/MES)

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THE DEVELOPMENT OF ONLINE LEARNING AT UNITEC – SAME ENVIRONMENT, NEW LANDSCAPE?

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Abstract

UNITEC's short history in the field of online learning provides a story of changing attitudes and usage at three levels - organisational, tutorial and student. From the first course designed for flexible delivery in 1994, UNITEC has progressed through three distinct phases of course development. As of the middle of 2001, UNITEC has over 300 courses that are completely online, or have some element of online delivery or support for students, ranging across all five academic faculties. To support this rapid increase in the use of the medium, a number of organisational changes have been made, along with a programme of professional development and tutor and student support.

This paper looks briefly at the process of growth, and the changing nature of ongoing tutor development. There have been significant changes in the way tutors use the course delivery interface and the professional development programme has tended towards more active support of the issues of teaching and learning. We report on some of the lessons learned, the difficulties that have arisen, and look at some of the challenges for the future.

Keywords

flexible learning, online learning, online course development

Introduction

UNITEC Institute of Technology in Auckland has a relatively short history as a tertiary education provider, dating back to its inception in 1976. As Carrington Technical Institute, the institute was mainly trades-based, focusing on Applied Skills trades such as automotive, plumbing, building, interior decorating and boat building. In 1994 the institute was re-named UNITEC Institute of Technology, signaling an aggressive move into the more academic streams of tertiary education. UNITEC now (mid-2001) offers 17 undergraduate degree programmes, 6 Postgraduate Diplomas, 5 Masters programmes and one PhD, from four academic faculties. In conjunction with the diversification of programmes offered at the Institute, there has been a progressive uptake of web-based technologies to support teaching and learning. This progression has occurred in three distinct stages – see the overview in Table 1.

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Development stage and approach	Number of courses	Time period (and actual development time)	Development team*	Purpose of web-based material	Main course elements and features
STAGE 1 Custom-built online courses in isolated departments	3 (approx 18 months)	1994 – 1998	Lecturer, programmer	Replace existing distance course, facilitate collaborative assignments, enable better class communication and faster access to more resources	Course notes, course information, student journal for individual assignments, email, listserv, web resources.
STAGE 2 Custom-built online courses across faculties as funded projects	10 (3 completed)	1998 – 1999 (12 months)	Lecturers, programmers, project manager, educational designer, graphic designer	Supplement classroom teaching. Port all theory material to the Web and make it more interactive. Introduce students to Internet. Introduce online collaborative assignments. Provide self-assessment mechanisms. Monitor student use.	Course notes, course information, student journal for individual and collaborative assignments, discussion board, self-testing quizzes, interactive tutorials, web resources, student tracking system.
STAGE 3 Online course development using web course management systems (WCMS)	250 – 300	1999 – 2001 (approx 2 weeks – 2 months' development time)	Lecturers, with support from learning technologies specialists	Supplement existing on-campus courses to provide more flexibilty, supplement existingdistance courses, provide new distance/ flexible courses.	Courses and course elements with consistent interface (of WCMS). Common elements such as announcements, Discussion Board, course documents, course information, group pages, student drop box.

All course development has been for groups of 20 to 300 students.

Table 1: Summary of development mechanisms and courses

1994 – In the Beginning: the First Online Programme

In 1994 the first flexible, online programme – the Diploma in Educational Technology – was developed. In New Zealand, a Certificate, Diploma or Degree "programme" is made up of a number of "courses" where a "course" is the equivalent to an Australian "unit" and consists of approximately 300 hours' study. A separate paper (Halliday, 2001) at this conference reports in more detail on the development of the Diploma since 1994.

1998 – Online Course Development Projects in all Faculties

By 1998, pressure was starting to be applied by individuals from other departments around the campus to provide web-based courses or components of courses for their students. A few tutors and Heads of Schools had already done some ad hoc development of courseware using a variety of web editing applications such as DreamWeaver, FrontPage and NetObjectsFusion. The Department of Learning Technologies proposed a more co-ordinated and consistent approach. A programme of educational design and development services, together with release time for content specialists within the faculties was agreed with the Institute's Senior Management Team. Plans were drawn up to produce ten online courses within the first year. These ten courses were selected from a number of applications across the institution, based their suitability (in terms of strategic and pedagogical factors) for web delivery. These courses would be developed on a project basis, by teams of faculty experts, an educational designer, programmers, a graphic designer and project manager.

While there was plenty of initial enthusiasm from the faculties, much of this waned as the realities were realised. Three courses did see elements of full development and delivery, but the production fell short of the expectation for a number of reasons:

- In some cases the development teams had high expectations of interactive multimedia-type functionality being achievable on web pages. In the early stages the ratio of educational design time to programming time ranged from one hour of educational design time requiring 40 to 80 hours of programming time. While many of the complex routines were re-usable across projects, this amount of development time was unsustainable given the small development team available for each of the ten projects.
- Funds that were allocated to faculties for the release of teaching staff were not always used for that purpose. This put increased load on the teachers concerned, and contributed to the withdrawal of some from the project well before there was any significant development.
- Insufficient design and programming staff within Learning Technologies contributed to some projects being incomplete or delayed.

While it is easy to point to inadequacies in this approach and its execution, some excellent work was completed, and three of these modules are still being used three years later. It was also a period that allowed much to be learned about the realities of online course delivery.

Results of formative evaluations conducted throughout this phase informed subsequent designs of the online courses. These results also showed what was required to support staff and students in the use of these new modes of delivery (e.g. printed staff and student "how to" guides, and course-specific orientation exercises to introduce students to the user-interface and functionality of the online modules). Feedback from questionnaires, classroom observations and focus groups with staff and students revealed that while students found many of the online components fairly useful, these materials needed to be introduced and supported in a more structured way. A consequence of this feedback for one course (on Business Computing), was that the "theory" (taught in lecture theatres) and "practical" parts (taught in computer labs) of the course were integrated so that all teaching took place in computer labs. This enabled students and staff to make more use of the online components in all parts of the course.

Assessment of online course work raised new issues for some staff, who tended to make the online course components supplementary and voluntary to start with, and then found that only the most

conscientious students used them. The integration of online components with existing courses was a challenge for the on-campus courses (as opposed to the flexible or distance courses); not only for the tutors who had been part of the online course development teams, but also for the tutors who had not been directly involved in this development (and most of whom were new to online learning), but who had to use the online modules in their teaching.

The authors feel that this early "project phase" was an integral and necessary part of the process for the Institute in coming to better understand the reality of committing to web-based access to courses for students. We believe that many tertiary institutions (in New Zealand at least) are still at this stage, and are understandably working through this and looking for more efficient systems.

1998 – Evaluation of Web Course Management Systems (WCMS)

By the end of 1998 it was recognised that the current system would not support a larger scale move to flexible course delivery for the Institute. There were a number of key reasons for this, including:

- The cost of development time and resources far outstripped the benefits in most cases. Experience thus far showed that one course took at least six months to develop, with a part-time commitment of at least three members of staff. Even if web "templates" were used to enable similar web features to be created in different courses without support from design or programming staff, we could not foresee how this cost could support larger scale online course development activities.
- Technical dependence for most staff became a hindrance to ongoing maintenance and development of courses. Whenever changes were required the tutor had to channel requests through a programmer, which involved a time delay and further cost implications
- The potential for supporting the growth in online courses as expected by the Senior Management Team (10% of all courses by the year 2000) was clearly unachievable.

This realisation led to an evaluation of a number of commercially available Web Course Management Systems (WCMS). One of the key requirements of such a system was that the teaching staff should be 'technically independent' as far as possible. We believed that placing the development tools in the hands of the tutors, and reducing the technical learning curve as much as possible, would remove one significant obstacle to the growth in online course delivery to students (other obstacles to tutors "going online" are discussed briefly later).

Cost was also clearly a factor in the choice of the WCMS. Without a proven history and experience in the support of distance students, it was difficult to justify a large investment initially. After a careful study and analysis of many course development frameworks (a total of over 40 were identified initially) a decision was made to adopt the Blackboard system for the campus as a whole. At the same time, WebCT was also being trialled within one department, allowing both systems to be tested within the UNITEC environment.

The main attributes that initially pointed to Blackboard being the preferred choice of WCMS included the following:

- It was (in our opinion) the easiest to use for tutors, providing the most direct and least difficult path to course development.
- No extra software (other than a browser and Internet access) was required for either the tutors or students. Most development could be completed without the assistance or intervention of technicians or programmers.
- Most development could be completed without the assistance or intervention of technicians or programmers.
- A one-off cost provided unlimited courses and enrolled students, keeping the cost to the Institute relatively low at the early stages.
- Support from the Blackboard company appeared to be efficient and comprehensive. The early stages of installation and deployment of the system went relatively smoothly, with Blackboard technical staff generally answering queries by email within 24 hours.

While Blackboard was promoted as a course development tool for staff across the Institute, the network infrastructure for online courses was maintained so that other course delivery software could also be trialled and used if tutors wished to use alternatives to Blackboard.

Promoting the Use of the WCMS at UNITEC

The use of the Blackboard WCMS at UNITEC was promoted widely to teaching staff in a number of ways. A series of introductory workshops were held to provide an awareness of what was possible in an online learning environment. Most of the staff who attended were essentially new to the concept of online learning and web-based access to courses. Many used these workshops to just start thinking about its application to their courses and their teaching practice. Demonstrations of the software were also given at a number of departmental meetings, where staff could reflect with their peers on the potential of online learning.

The major impetus for the uptake of the WCMS came in the first instance from those who were already using the Internet in some form to support their courses. Two of the School of Education courses that had initially been custom-built in the first phase of UNITEC's web-course development were converted to Blackboard. This was not totally satisfactory, as features such as individual student journals could not be exactly duplicated in Blackboard. The trade-off for these tutors was the independence it gave them from technical support required for ongoing course development.

However, the "early adopters" were often isolated in their teaching departments. Institutional policies and procedures for online teaching were not yet in place. These tutors were taking risks in a new educational terrain and they needed professional development and support. One of the approaches to meeting this need was to promote the concept of a 'champion' in each of the five faculties who would co-ordinate technical and pedagogical support, and be the key contact person for administrators of the WCMS. This was achieved to some extent in all five faculties. The most effective example of this role was one faculty where the "champion" or "online teaching co-ordinator" was released from full-time to part-time teaching (0.5 of each). When this position was changed back to a full-time teaching position for one semester, the lack of progress in online course development in that faculty for that semester was clearly evident.

Strategic support from the Senior Management Team was vital at this stage, with Deans and Heads of Schools being given a very positive message about the future and impact of web-based access to UNITEC courses. It was important that tutors who wanted to develop their online components for their courses should get support from their managers, even if this was simply tacit approval, without the tangible support of time release that most would have liked.

A study of factors that UNITEC staff believed were most important for online course development (Holley, 2001) reflects the needs described above. The majority of respondents (n=46) indicated that the five most important factors for online course development were (in order of priority):

1. Time allowance
2. Staff development workshops
3. Basic computing skills
4. A faculty-based co-ordinator, and
5. Management support

The First Growth Spurt

Many staff came to workshops or departmental presentations, saw, were interested, then went away to think more about the implications of this new mode of delivery. Many were justifiably cautious about increased workload, and skeptical about the real worth of this system for them and their students. But many more were also excited about the prospect of providing an extra dimension to their courses, and added flexibility for their students. Some had very practical reasons for

becoming interested – they were teaching remote groups of students in areas such as Wellington, Christchurch and individuals in rural areas; students were in practical placements, such as teaching and nursing students; students were in remote South Pacific islands; or they were teaching elite sports students who were travelling internationally with representative teams.

As a consequence of the meetings and workshops, there was a rapid rise in the number of "course shells" being created in Blackboard. These were "empty courses" that had a registered tutor but no content and no enrolled students. Some departments decided on a full-scale commitment to this form of development and had shells created for all their courses at once. Others were more reluctant to take such a strong stand, and left it to individual staff. Figure 1 shows that within the first year of adopting Blackboard, over 250 course shells were created. At this stage the tutors were becoming keenly aware of the fact that the quantity of online courses was seen as important. Quality was in many cases a casualty of this drive.

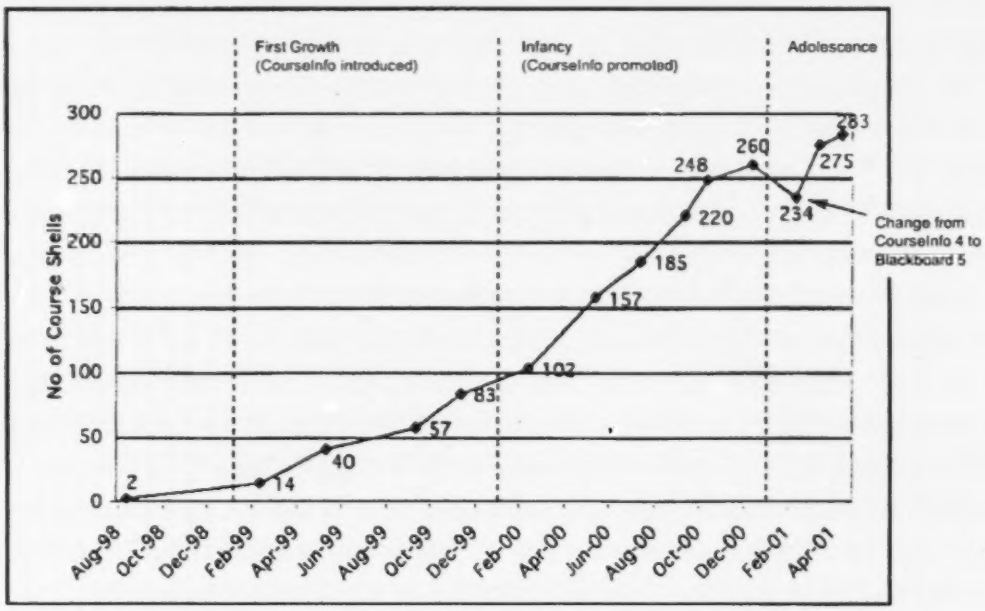

Figure 1: Growth of UNITEC online course shells from August 1998 to May 2001

It was inevitable that many of the courses created in the first flush of enthusiasm were not well conceived or designed, and most gave little indication of being 're-designed' to take advantage of what the web could offer to enhance the learning process. The development approach to many of these early online courses was technology-driven, rather than pedagogy-driven. While some tutors were quite happy to view the Blackboard shell as a means of flexible content delivery, others were keen to learn and think more about the ways in which the web could add value to the teaching and learning process. Both anecdotal and research evidence revealed that the courses that were being developed in depth were clearly showing the value of integrating web-based activities into the normal class-based activities. For example:

- The quality of students' assignments rose sharply in some cases.
- Tutors reported benefits of online teaching such as working more collaboratively with their peers, and being relieved of many tedious administrative and formative assessment tasks.
- Some students from non-English speaking backgrounds were more confident about participating in online activities, given the opportunity to write their answers and reflect on these, and to check the correctness of their language before posting contributions (Rainsbury & Malcolm, 2001).
- Students appreciated the rapid feedback provided by self-study quizzes.

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Infancy

As more and more courses were "going online", there was an increased student expectation of web access. In the early stages of this growth, a number of initiatives were tried to encourage uptake by both tutors and students, including:

- To promote the ideas of 'best practice', a Blackboard Users' Group was formed, inviting all users of Blackboard at UNITEC to attend monthly meetings. The main purpose of these meetings was (and still is) to share ideas of best practice between practitioners, as well as to update users about new versions and any other issues of a mechanical or technical nature. Individuals from within the group have been encouraged to take a role in submitting an agenda for each meeting. The ongoing effectiveness of this meeting depends largely on the involvement and enthusiasm of its participants. The general feeling is that this is a very useful time, although there are still many tutors who do not attend.
- A second series of meetings was held with tutors on a department basis to discuss the underlying teaching and learning principles of the online environment. A number of issues were raised in these meetings, including the use of Discussion Boards, the place of Group Work, and the issues of online Assessment. There was also useful discussion of issues such as copyright, workload and collaborative teaching. Tutors were being encouraged to make the step towards online teaching for their own reasons – i.e. to 'jump' rather than being 'pushed'.
- A student handout was produced by Learning Technologies, to be available for all staff to give to students at the beginning of their course. The handout covers aspects of access (logins, passwords, etc), help (who to go to for what), minimum system requirements (for Mac and Windows computers) and the features and activities available with Blackboard. We are currently in the process of producing a staff equivalent, as an easy guide to course preparation.
- The champions identified within each faculty, were encouraged to act as a more direct support link to their colleagues (than was available to the limited number of Learning Technologies staff). In at least three departments, these champions took a very proactive role in promoting and supporting tutors to make the most effective use of Blackboard. In other cases, the interest and uptake within the faculty has not been enough to maintain the momentum of this role. In these cases, Learning Technologies has generally provided the support directly.

Adolescence

The beginning of this year (2001) brought a major upgrade to version 5 of Blackboard. The process of transferring courses to the new version provided the opportunity to rationalise the list of courses on the server. It was decided that those courses that had been created on the server and not developed to any extent, should be archived and removed. All tutors were approached about the status of their courses, and in some cases this was a spur to renew interest and development. This rollover did see a substantial drop in the number of courses hosted in the new server – a number that has continued to rise steadily again this year.

At the same time, a more consistent and reliable enrolment interface was developed with the Student Management System – PeopleSoft. In the previous system, it had been left to each instructor to add their own enrolments to their class. This had led to a number of inconsistencies and confusion with students' user names. By using PeopleSoft to export a list of enrolments to Blackboard, the "userid" was made the same as the student logons to the campus network. There were a couple of fairly major and inconvenient hiccups at the inception of this process, but these were soon ironed out, and the system has been running smoothly since. The major inconvenience of this process is that instructors no longer have access rights to create accounts. Any non-standard accounts, such as other instructors or students who are not officially enrolled at UNITEC, now have to be created by designated system administrators within Learning Technologies.

A link with the campus IT Help Desk has allowed students to get more immediate assistance with logins, passwords and basic course access. A local UNITEC help database has also been developed with FAQs, hints and tips, and direct email contact for students to a person at the Help Desk. This

link to the Help Desk was essential in the rush of access difficulties at the beginning of the year. At the same time, Learning Support documentation was built into a web-based course, for which all students were automatically given access. Library collections and databases are also available online, directly from all web-based courses.

For the teaching staff, a more comprehensive range of workshops has been developed and delivered, largely focussing on the pedagogical aspects of teaching and learning. Discussions of good teaching practice are linked to the features and activities available with Blackboard, as well as taking a more detailed look at the potential of Discussion Boards, methods of moderating online discussions, Groups, web resource links, assessment, and meeting quality standards of web design and educational effectiveness. We have also created a couple of 'play-room' courses – courses to which staff have Instructor access, but with the understanding that they are only for trial and experimentation purposes.

Some key issues that our staff currently face in their online teaching include:

- Their changing role as tutors.
- Integrating new online teaching principles with existing teaching methods.
- Motivating students to take on responsibilities unique to online learning.
- Evaluating the effectiveness of new teaching methods to inform future practice.
- Similar issues have recently been identified in a British study of undergraduate and postgraduate online courses by Boyle and Cook (2001).

A professional development website about effective online learning is being developed, and invites contributions from other staff members. This resource applies a number of learning models (proposed by Reeves (1997), Pearson and Green (1999), and Herrington and Oliver (2000)) that promote student-centred learning and the use of authentic tasks to achieve personally relevant and meaningful learning outcomes. Emerging research on and models for effective online learning environments, are continually being reviewed.

A number of tutors are now working collaboratively with other off-campus instructors. A handful of UNITEC courses are being taught in conjunction with overseas universities, and access to these courses can be made easily and readily to the overseas tutors.

Maturity – Does it Exist?

If we follow the logical progression from infancy, through adolescence, the assumption is that we reach some form of maturity. If maturity implies a plateau in development, we don't believe that it exists in the development of web-based courses. The further we progress, the further the horizon extends, and we adjust to take advantage of a new landscape. There are a number of developments which encourage us to feel more confident about the way in which we are using and supporting online learning:

- The ever-growing number of students who expect web access to their courses will demand a greater and more comprehensive uptake of online course development by tutors.
- The tools and features within the WCMS must support an effective online learning environment. Any compromise on educational standards will doom online learning to failure. As tutors and students all become more experienced and more discriminating in their use of the tools, the more we will learn as a community to use and apply them to better meet our learning goals. Course and tutor evaluation instruments for online courses are currently being developed, as well as a set of quality standards for our tutors to use as guidelines.
- A number of New Zealand secondary schools (including the Correspondence School) are starting to make extensive use of the web as an online learning environment. UNITEC has provided a Blackboard server with free access for schools to host materials for, and communicating with, their students.
- Within New Zealand (and Australia) the number of educational institutions adopting some form of web course management system is also growing rapidly. As the body of experience with this form of development grows, so (hopefully) will our confidence and expertise in using it.

It is our hope and expectation that the community of educational providers in this part of the world will work together to promote better teaching and learning using the increasing bandwidth and the infiltration of the Internet into our society and across all sectors of education.

The Future

In recent weeks (through August 2001), the service of Blackboard for UNITEC students suffered a severe loss of performance. While our system was never out of action, time delays meant that it might as well have been. Students were taking twenty minutes simply to log on to the system. When the root cause was finally fixed, after a number of hardware and software adjustments, tutors were surveyed for their attitudes to the Blackboard environment.

Initial results from a survey representing about 20% of all Blackboard courses at UNITEC suggest an intention to continue increasing the usage and application of Blackboard. Only 17% of respondents expected to have no increase in their use of Blackboard, while 33% expected to have more courses, 33% expected to have more students, and 67% expected to be using more of the Blackboard activities next year. Attitudes were also surprisingly positive for both tutors and students. Only 25% of tutors rated their students as negative or reluctant; 17% were enthusiastic, with the majority (58%) rated as keen but concerned about access speeds. With the speed issues addressed, this group would be listed as positive about their experiences. The tutors were overwhelmingly positive in response – 62% still enthusiastic and 38% keen to continue using Blackboard, with no tutors reporting a negative attitude to continued use of Blackboard.

With these stated intentions, UNITEC approaches the next year or two of online course development with renewed commitment. The performance issues of the recent past have provided the spur for ensuring that Blackboard is adequately resourced – it is no longer a research and development project, but an essential component of the teaching and learning for our students. We must anticipate an increasing number of students and courses, though this increase promises to be steady rather than exponential. From a pedagogical perspective, it is also encouraging and gratifying to see increasing levels of use of the interactive elements of Blackboard – the discussion boards, external links, groups and student grades in particular. The challenge for us is to encourage the thoughtful and appropriate use of these activities as cognitive tools to enhance the learning environment of our students.

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